

Fig. 1

008211-6624260

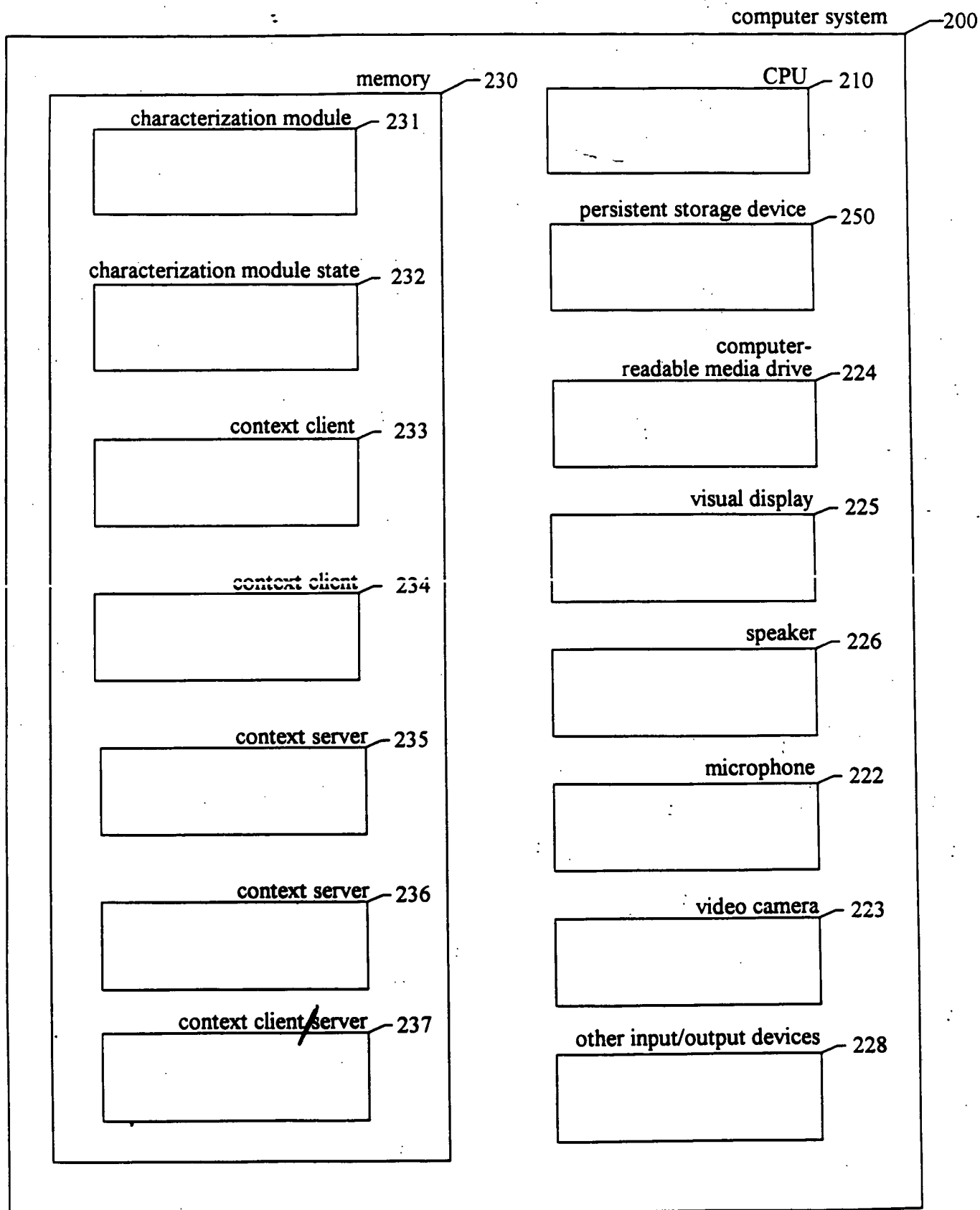


Fig. 2

310

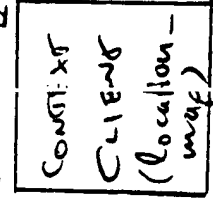
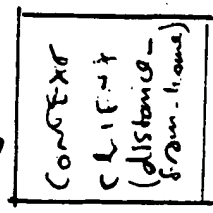
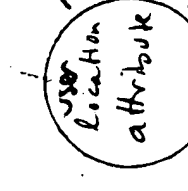
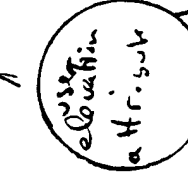
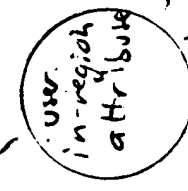
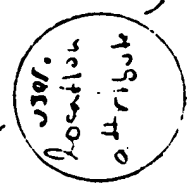
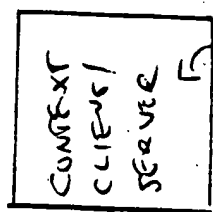
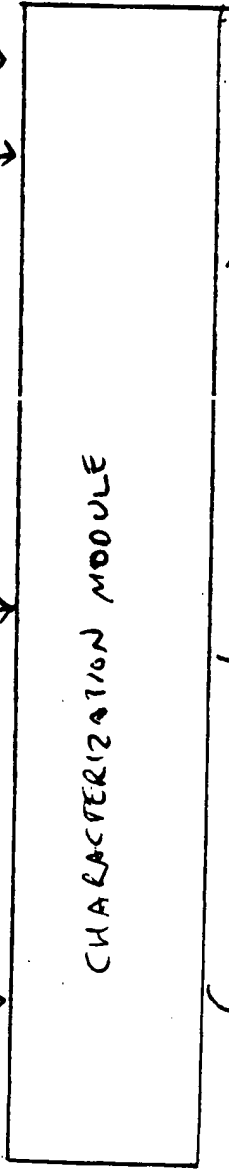
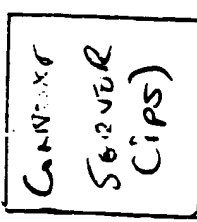
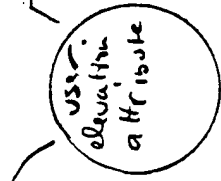
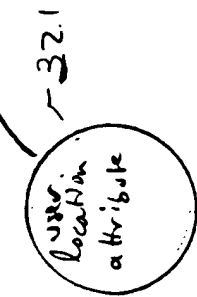
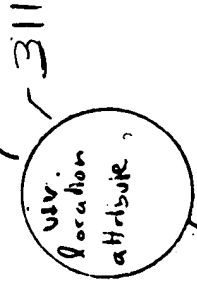
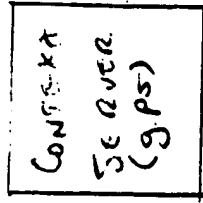


FIG 3

340

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322

331

region boundary 311

SECRET 65242260

400

context server table

context server name	version	installation date	filename	request handler
gps	1	2/10/2000	gps.exe	(reference)
ips	1	2/21/2000	ips.exe	(reference)
location_region_analysis	1	2/10/2000	l r a.exe	(reference)

FIG 4

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	0

00827" 66242460

-600

context client table

context client name	message handler
location map	(reference)
distance from home	(reference)
region analysis	(reference)

FIG 6

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22	.5	13:11:01.118 2/22/2000	meters	1
user.in_region	location_region_analysis	none	none	none	none	1

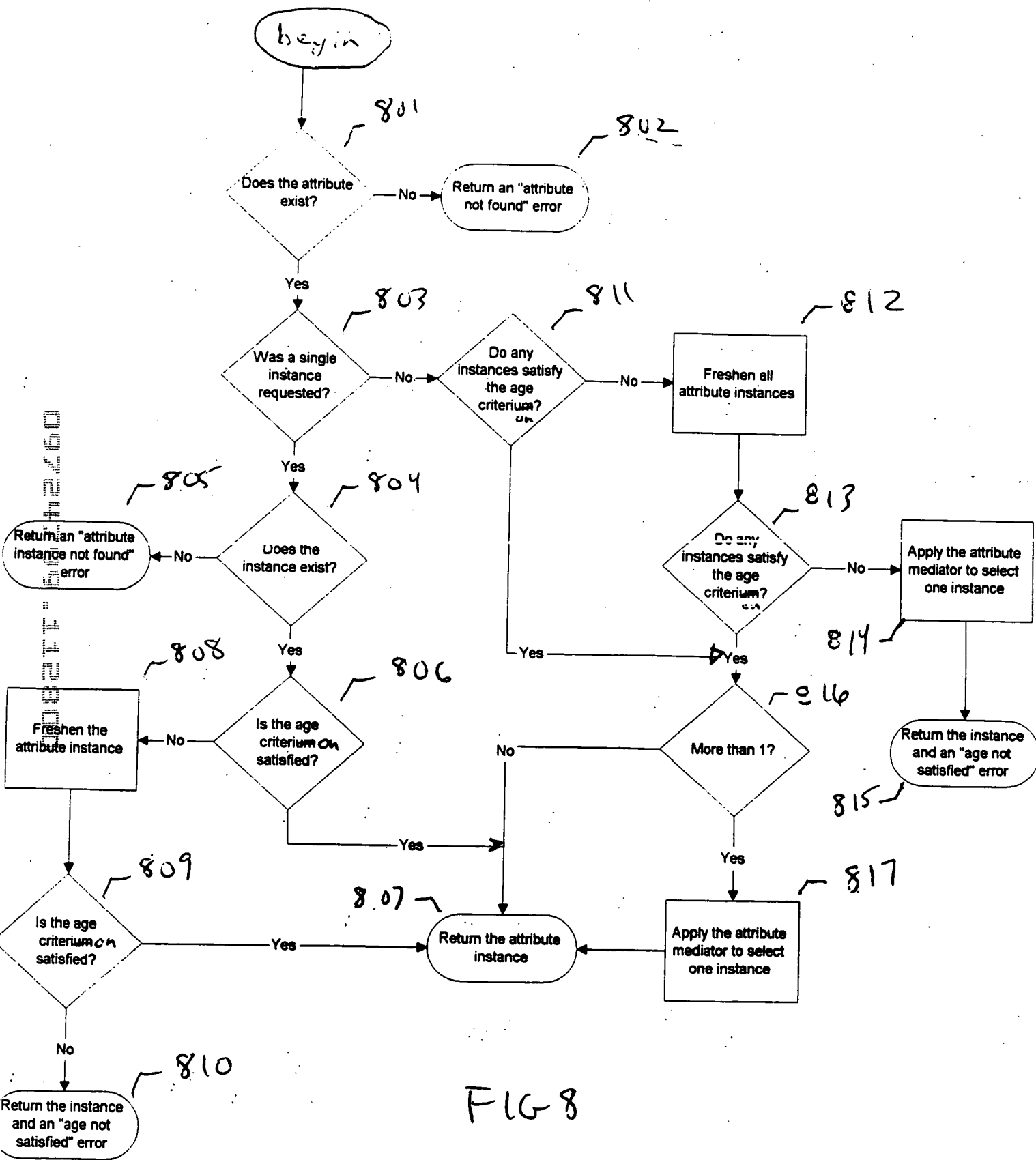


FIG 8

OBJECT "SECRETED"

attribute instance table

attribute name	context server name	value	uncertainty	timestamp	units	number of context clients consuming
user.location	gps	47° 38.73' N, 122° 18.43' W	0° 09'	13:11:04.023 2/22/2000	degrees/minutes	2
user.location	ips	47° 38.745' N, 122° 18.424' W	0° 021'	13:11:01.118 2/22/2000	degrees/minutes	2
user.elevation	ips	22.25	.5	13:11:06.565 2/22/2000	meters	1
user.in region	region analysis	none	none	none	none	1

900

916

915

914

913

912

911

FIG 9

condition table

condition name	context client name	first logical parameter	second logical parameter	comparison value	logical operator
in region true	region analysis	user.in region	none	TRUE	=

1000

1016

1015

1014

1013

1012

1011

FIG 10

OBJECT 6624260

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries crossed	region_analyses	in_region_true	TRUE or FALSE	30	13:11:29.101 2/22/2000	(reference)	no

FIG 11

condition monitor table

condition monitor name	context client name	condition name	behavior	frequency	condition last evaluated	trigger handler reference	stopped
region_boundaries crossed	region_analyses	in_region_true	TRUE or FALSE	30	13:11:59.101 2/22/2000	(reference)	yes

FIG 12

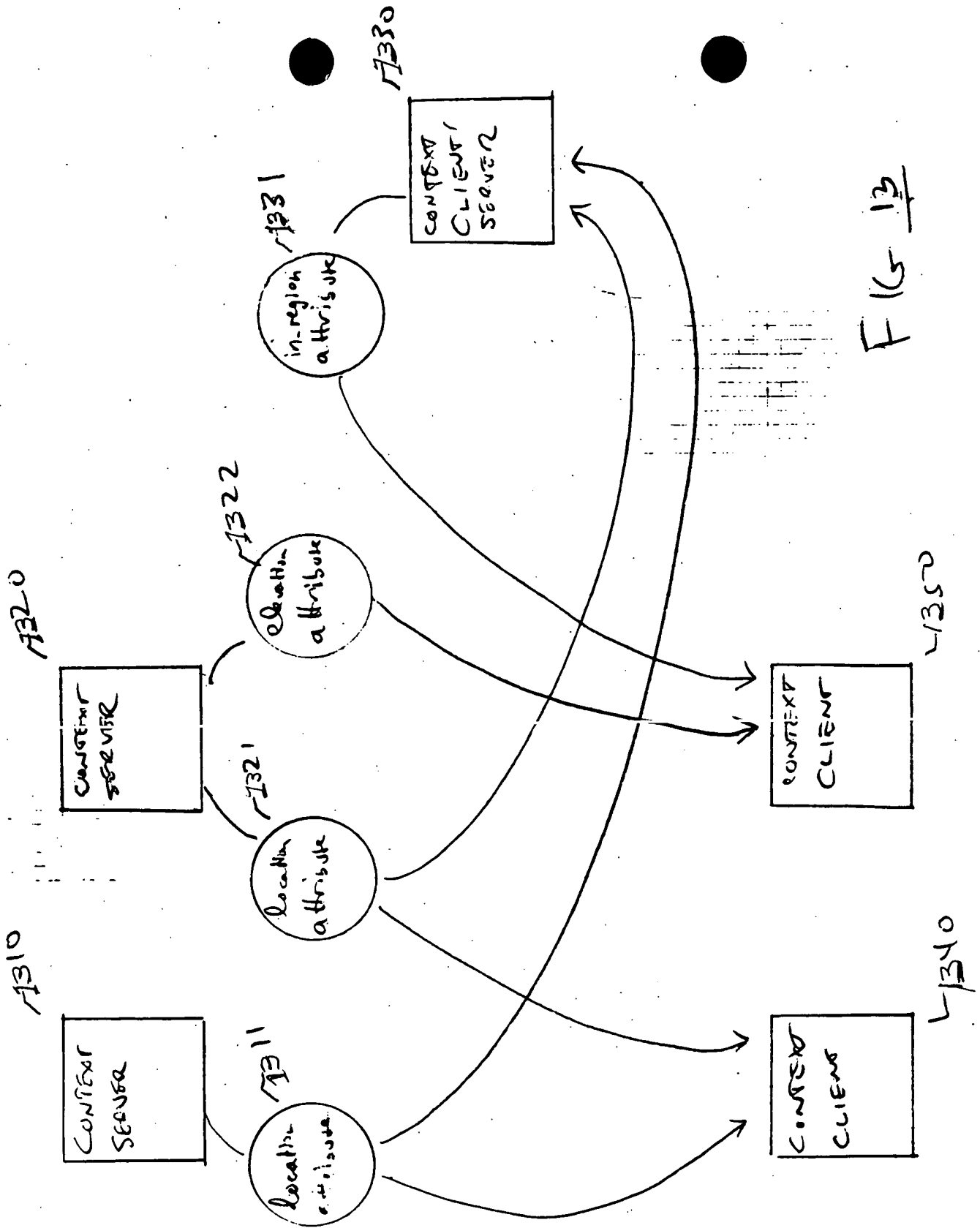


FIG 13

1401 ~
1402 ~
1403 ~
1404 ~

attribute name	context client name
user.location	distance_from_home
user.in_region	location_map
user.location [gps]	location_region_analysis
user.elevation	location_map

L 1411

2 1412

[illegible]

User.

Desired_privacy_level
 Interruptibility
 Speed
 Direction
 Acceleration
 Availability.
 Cognitive_availability
 Tactile_availability
 Manual_availability
 Visual_availability
 Oral_availability
 Auditory_availability
 Proximity.<Item or place name>
 Mood.
 Happiness
 Sadness
 Anger
 Frustration
 Confusion
 Activity.
 Driving
 Eating
 Running
 Sleeping
 Talking
 Typing
 Walking
 Location.
 Place_name
 Latitude
 Longitude
 Altitude
 Room
 Floor
 Building
 Address
 Street
 City
 County
 State
 Country
 Postal_Code
 Destination. (same as User.Location.)
 Physiology.
 Pulse
 Body_temperature
 Blood_pressure
 Respiration

Person.<name or ID>. (same as User.)

Platform.**UI.**

Oral_input_device_availability
 Manual_input_device_availability
 Tactile_output_device_availability
 Visual_output_device_availability
 Auditory_output_device_availability

Platform. (continued)**CPU.**

Load
 Speed

Memory.

Total_capacity
 Used

Storage.

Total_capacity
 Used

Connectivity.

Connection_status
 Connection_speed
 Connection_type/device
 Connection_activity

Power.

Power_source
 Power_level

Environment.**People.**

Nearest
 Number_present
 Number_close

Local.

Time
 Date
 Temperature
 Pressure
 Wind_speed
 Wind_direction
 Absolute_humidity
 High_forecast_temperature
 Low_forecast_temperature
 People_present
 Ambient_noise_level
 Ambient_light_level
 Days.<previous or future>.
 High_temperature
 Low_temperature
 Precipitation_type
 Precipitation_amount

Place.<place name>. (same as Environment.Local)

Application.**Mail.**

Available
 New_messages_waiting
 Messages_waiting_to_be_sent

Phone.

Available
 In_use
 On/off
 Notification_mechanism
 Call_incoming
 Caller_ID

Sound_recorder.

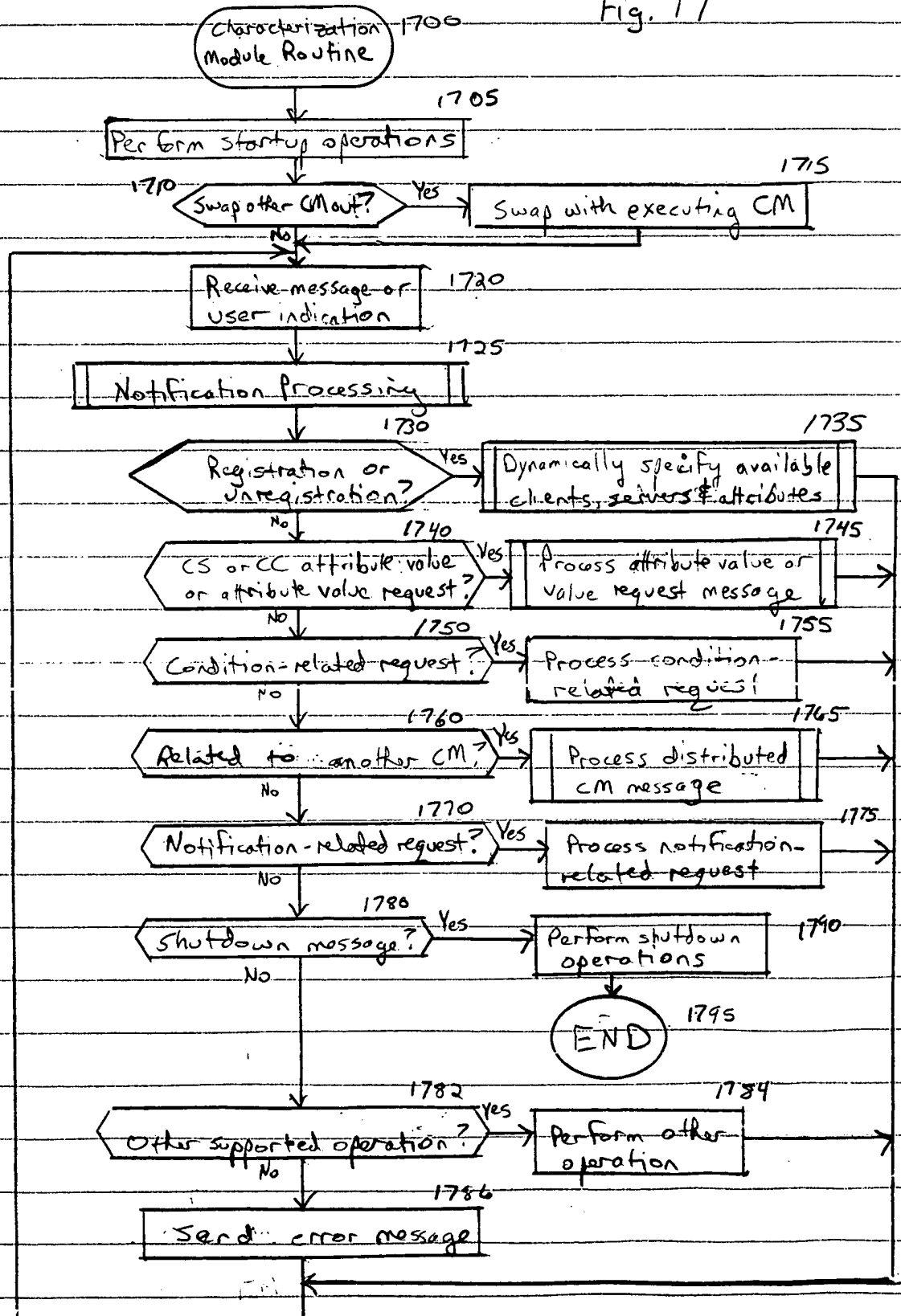
Available
 Recording

Fig. 15

- 1) User Setting
 - a) Mental Context
 - i) Meaning
 - ii) Cognition
 - (1) Divided User Attention
 - (2) Task Switching
 - (3) Background Awareness
 - iii) Solitude
 - iv) Privacy
 - (1) Desired Privacy
 - (2) Perceived Privacy
 - v) Social Context
 - vi) Affect
 - b) Physical Situation
 - i) Body
 - (1) Biometrics
 - (2) Posture
 - (3) Motion
 - (4) Physical Encumbrment
 - (a) Senses
 - (i) Eyes
 - (ii) Ears
 - (iii) Tactile
 - (iv) Hands
 - (v) Nose
 - (vi) Tongue
 - (b) Workload demands/effects
 - (c) Interaction with computer devices
 - (d) Interaction with people
 - (e) Physical Health
 - ii) Environment
 - (1) Time/Space
 - (2) Objects
 - (3) Persons
 - (a) Audience/Privacy Availability
 - (i) Scope of Disclosure
 - (ii) Hardware affinity for privacy
 - (iii) Privacy Indicator for User
 - (iv) Privacy Indicator for Public
 - (v) Watching Indicator
 - (vi) Being Observed Indicator
 - (4) Ambient Interference
 - (a) Visual
 - (b) Audio
 - (c) Tactile
- 2) Computer
 - a) Power
 - b) Configuration
 - i) User Input Systems
 - (1) Hand/Haptic
 - (a) Keyboard/Keystrokes
 - (2) Voice/Audio
 - (3) Eye Tracking
 - (4) Cursors
 - (a) Axis
 - (b) Resolution
 - (i) Selection
 - (ii) Invocation
 - (c) Accelerators
 - ii) Output Systems
 - (1) Visual
 - (a) Resolution
 - (2) Audio
 - (a) Public/Private
 - (3) Haptic
 - iii) External Resources
 - (1) I/O devices
 - (2) Connectivity
 - c) Data
 - i) Quantity/State
 - ii) Urgency/Importance
 - (1) Use of Prominence
 - iii) Modality
 - iv) Sensitivity/Purpose
 - (1) Privacy Issues
 - (2) Use of Association
 - (3) Use of Safety
 - v) Source/Ownership
 - (1) Types
 - (a) User generated
 - (b) Other computers or people
 - (c) Sensor
 - (d) PC State
 - (2) Use of Association

Fig. 16

Fig. 17



Notification Processing Subroutine 1725

Fig. 18

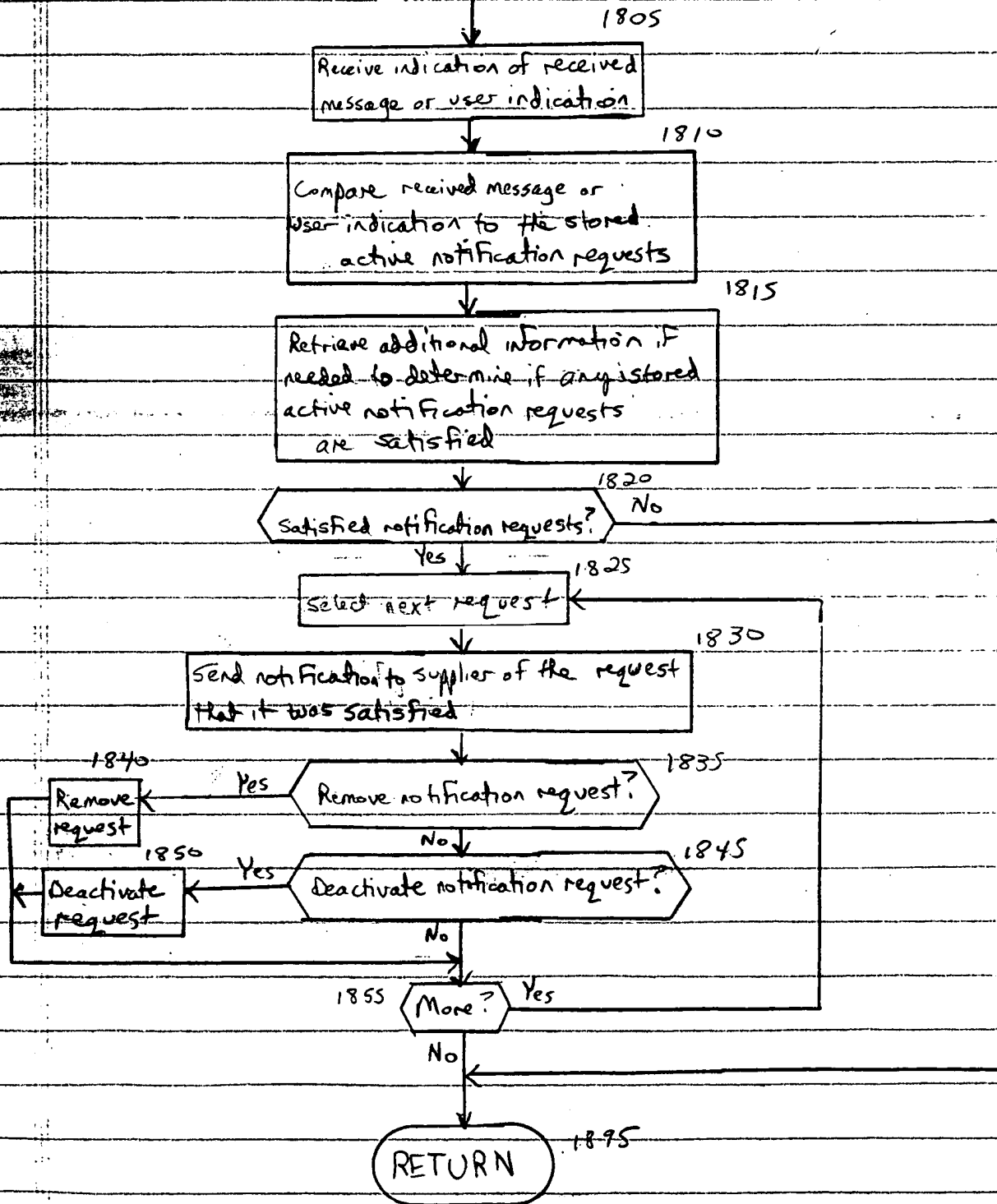


Fig. 19

Dynamically Specify Available
Clients, Servers, & Attributes
Subroutine

1735

Receive a registration or
unregistration message

1905

1910 Need security approval?

Yes

Determine if security
is satisfied

1915

satisfied?

1925

Send error
message

client

Related to ?

server

attributes

1941

Register new
client if
possible

Register?

Yes

No

1942

Error?

No

Yes

Send error
message

1944

Attributes
included to
register?

Yes

No

1950

Unregister
client

Unregister?

Yes

No

1952

Any currently
registered attributes
for the client?

Yes

No

1954

Unregister?

Yes

No

Unregister each
attribute

1954

RETURN

1995

Register?

Yes

No

1980

Select next
attribute

1982

Attribute exists?

No

Yes

Register new
attribute
instance

1988

Register new
attribute

1990

More?

Yes

No

1960

Register?

Yes

No

Register new
server if
possible

1962

Attributes
included
to register?

Yes

No

Error?

Yes

No

Send error
message

1964

Unregister?

Yes

No

Unregister
Server

1970

Any currently
registered attributes
for the server?

Yes

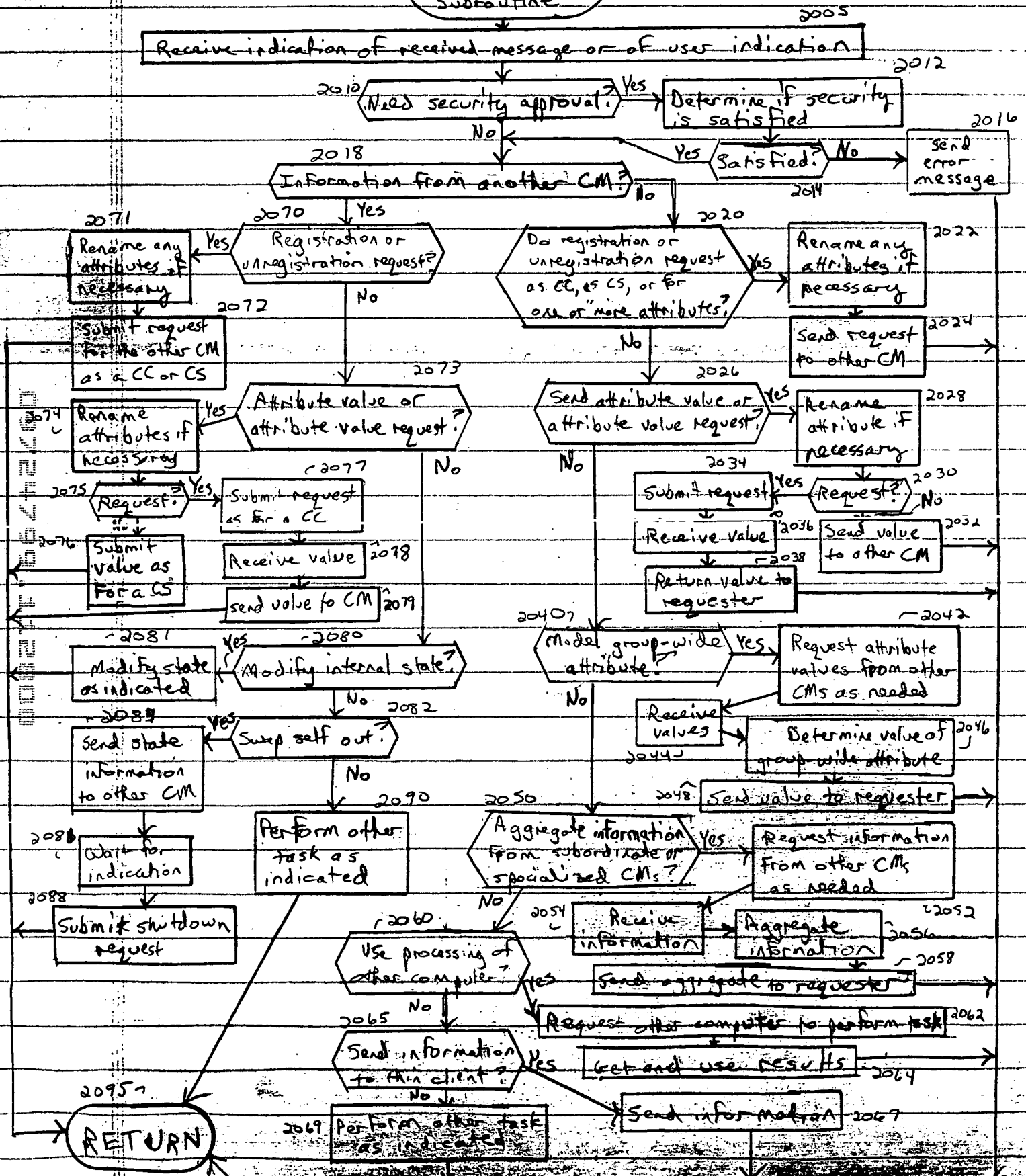
No

1972

Process Distributed CM Message Subroutine

1765

Fig. 20



1745
Process Attribute Value
On Value Request Message
Subroutine

Fig. 21

2105
Recieve indication of received
attribute value or value request

Request Value or request? Value

2150
Identify all attribute
instances matching
the request

2152
Any instances?

2154
Send error
message

2156
Select next instance

2158
Need new value?

2160
Pull attribute value
from server

2162
Receive value?

2164
Process received
attribute value

2166
More?

2168
Multiple values
available?

2170
Mediate available
values

2172
Send mediated value and
additional information
to requester

2174
Single value
available?

2176
Send value and
additional
information
to requester

2178
Send error
message

2195
RETURN

2120
Process received
attribute value

2122
Identify all attribute
value requests that
match the value

2124
Any requests?

2130
Multiple attribute
instance values?

2132
Mediate available
values

2134
Select mediated value

2136
Select received value

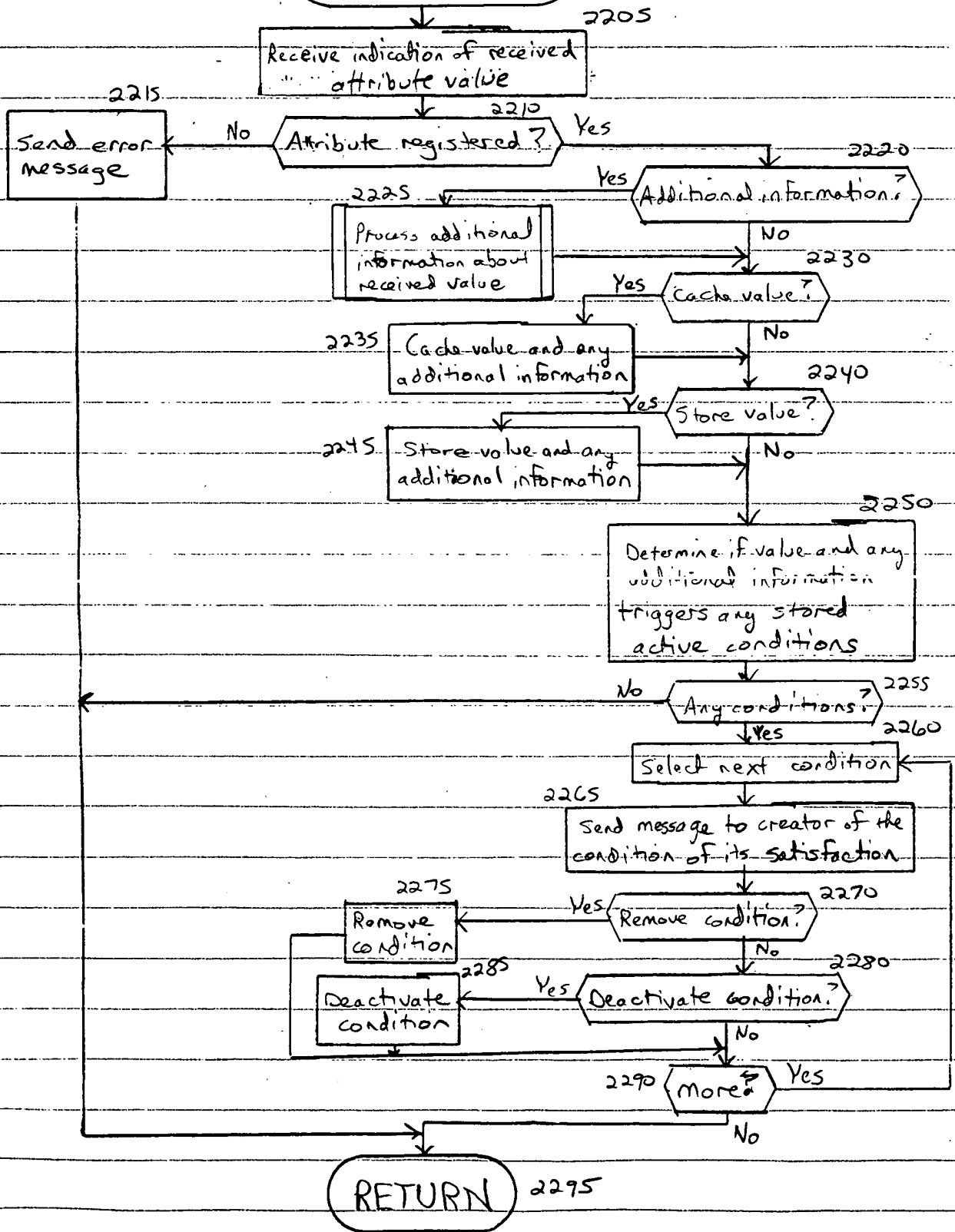
2138
Select next request

2140
Push selected attribute
value to client

2142
More?

Process Received
Attribute Value
subroutine

2200 Fig 22



Process Additional Information
About Received Value
Subroutine

Fig. 23

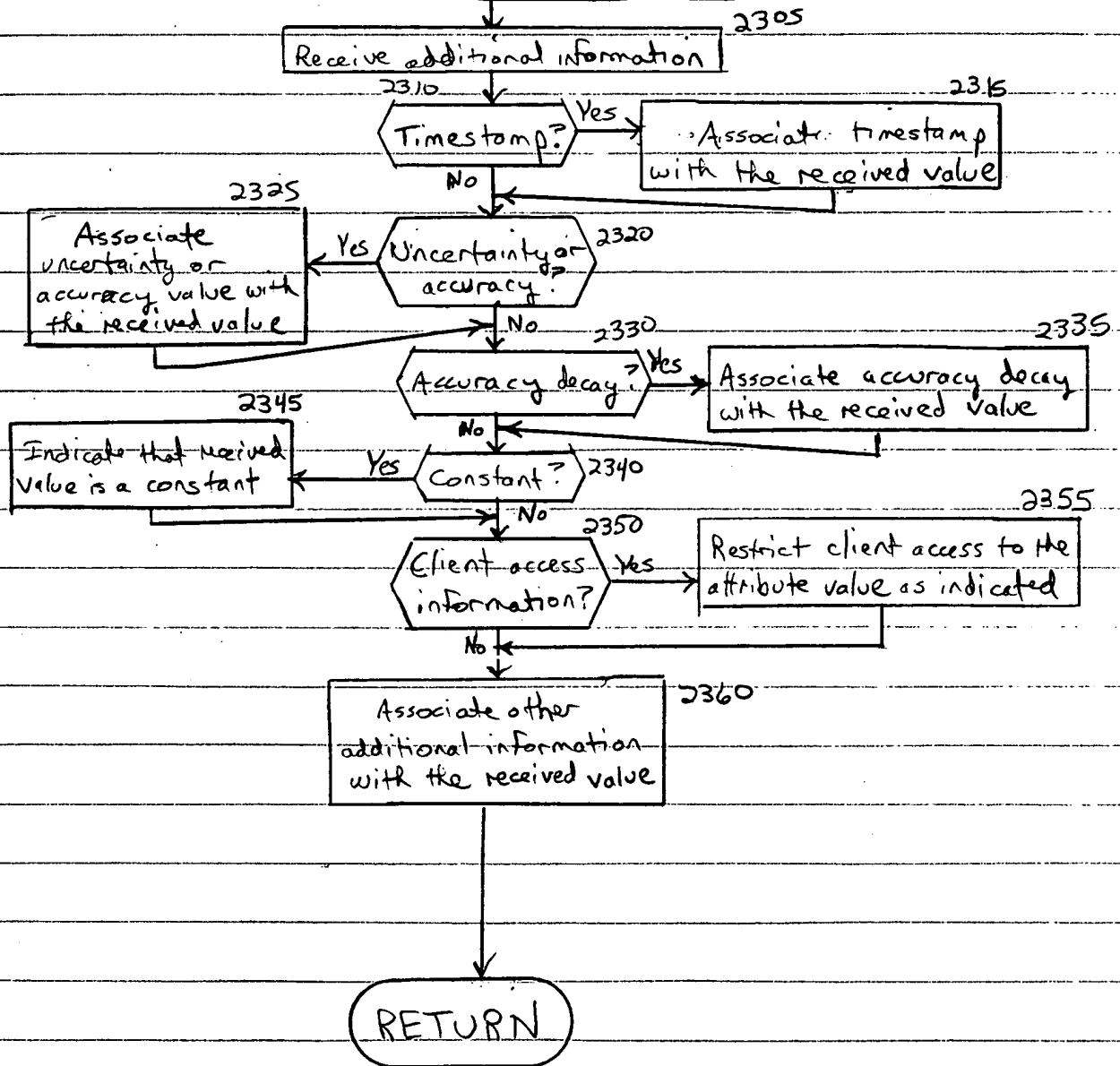


Fig. 24

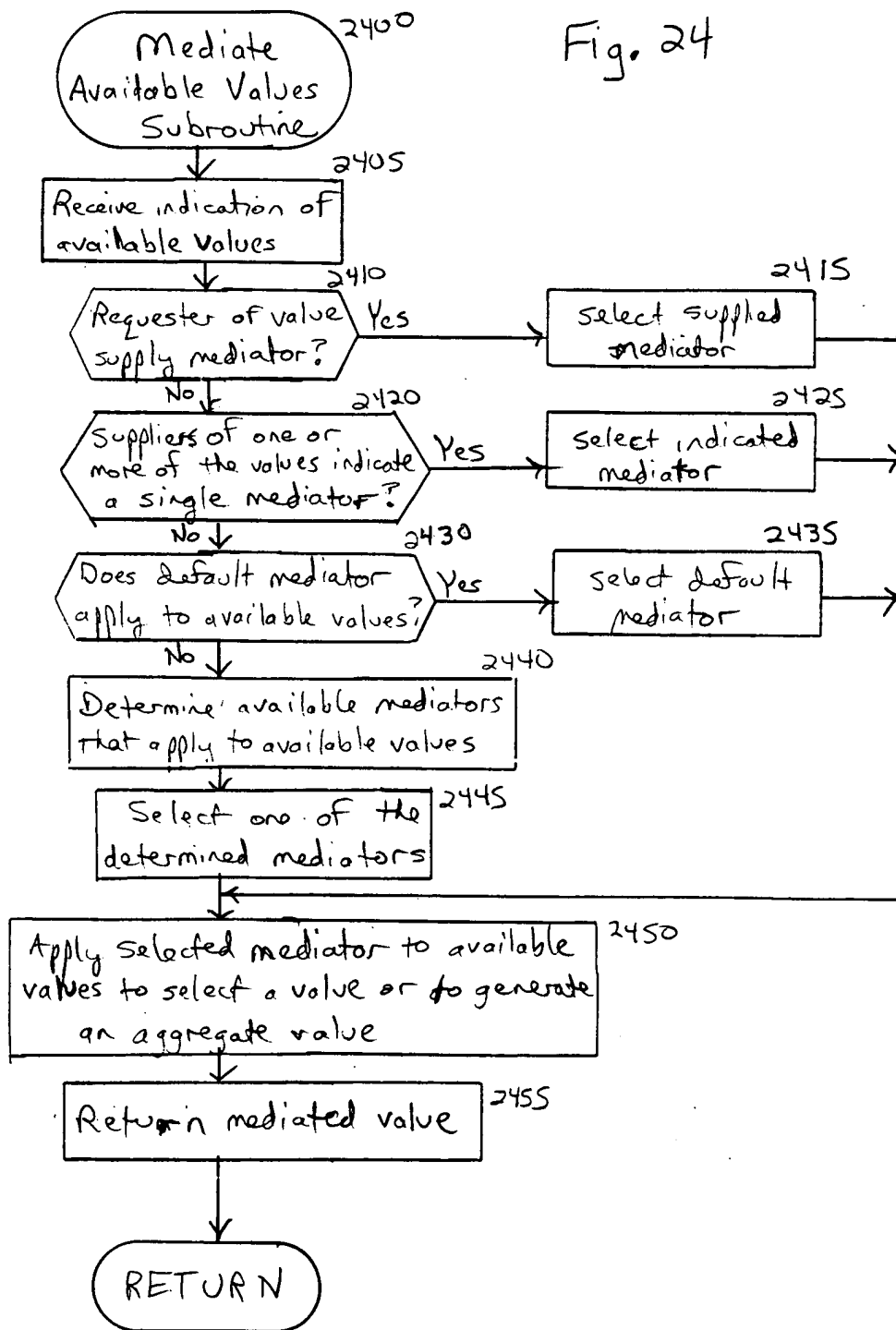
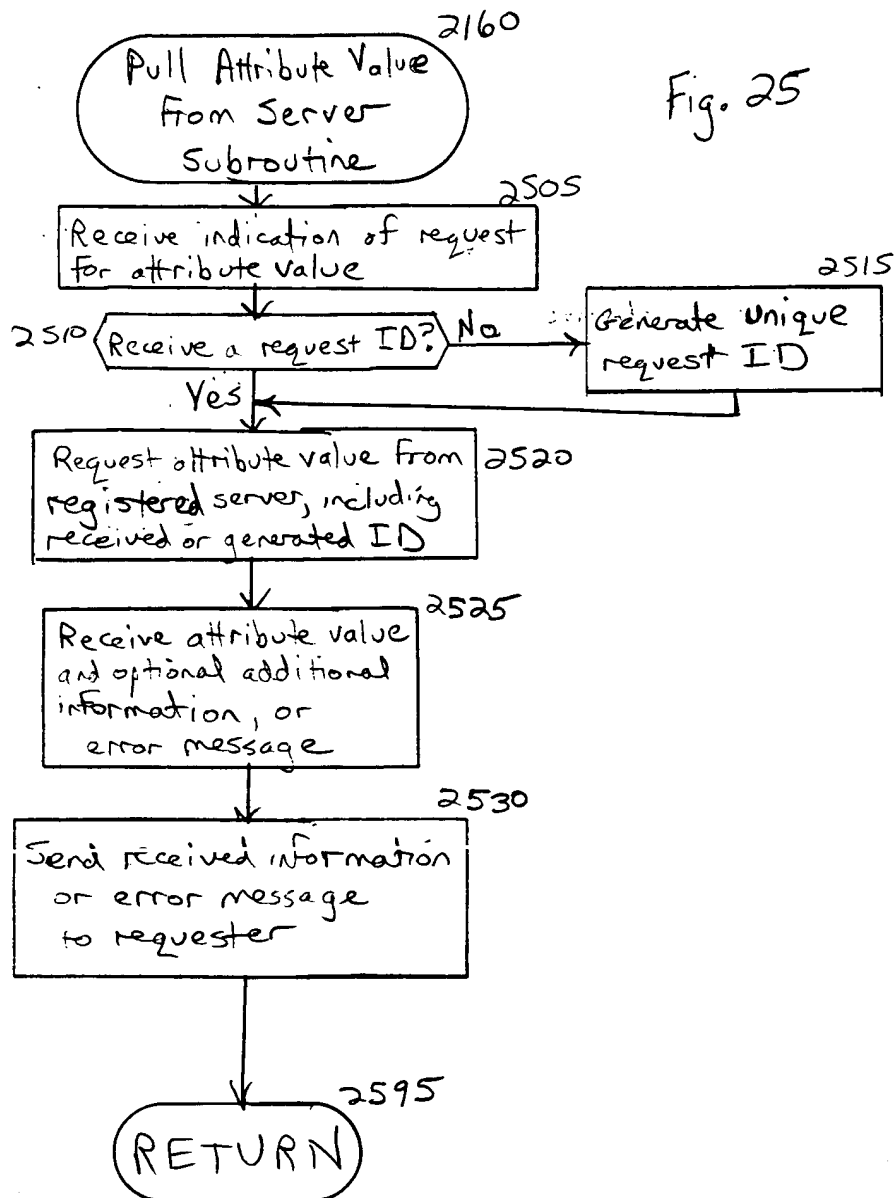
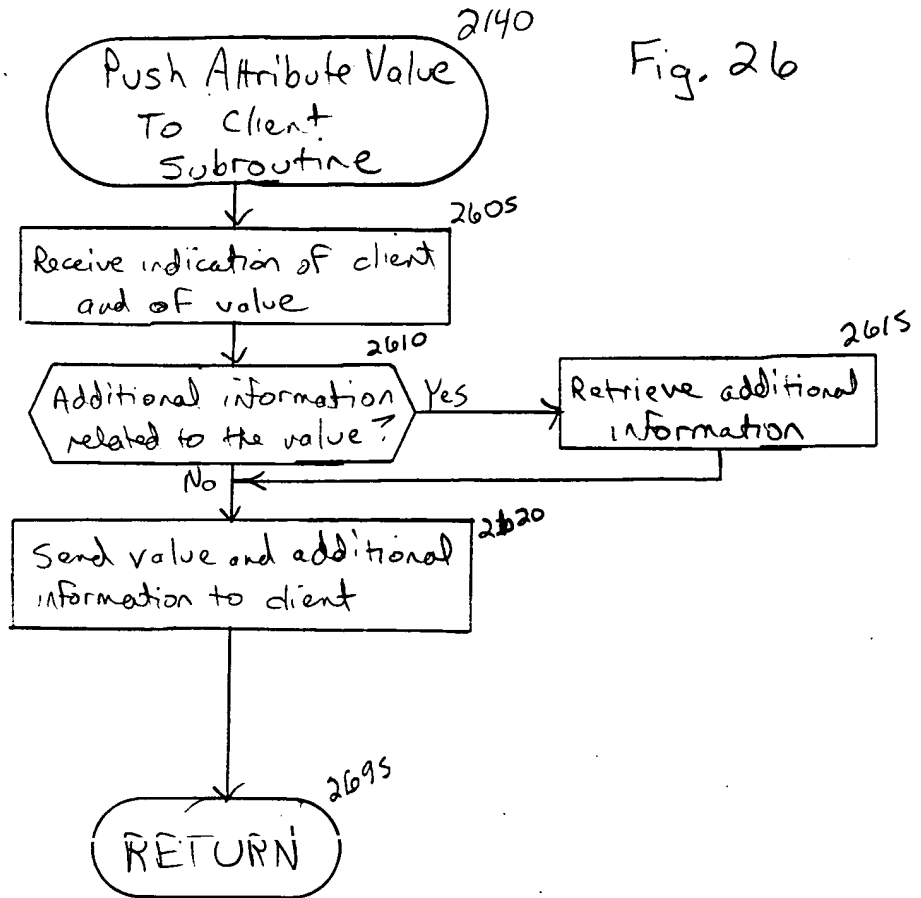


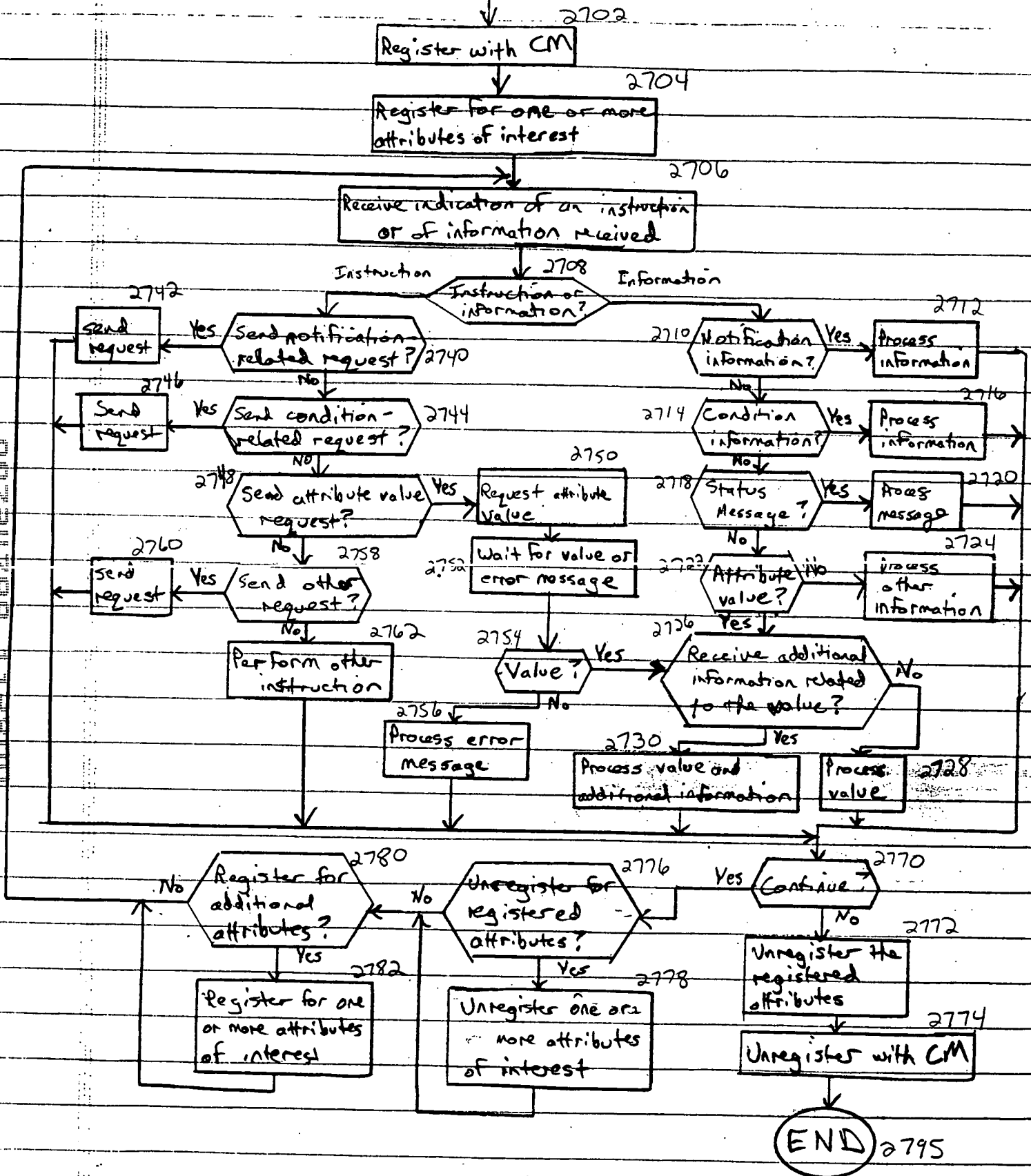
Fig. 25





Context Client Routine 2700

Fig. 27



Context Server Routine 2800

Fig. 28

